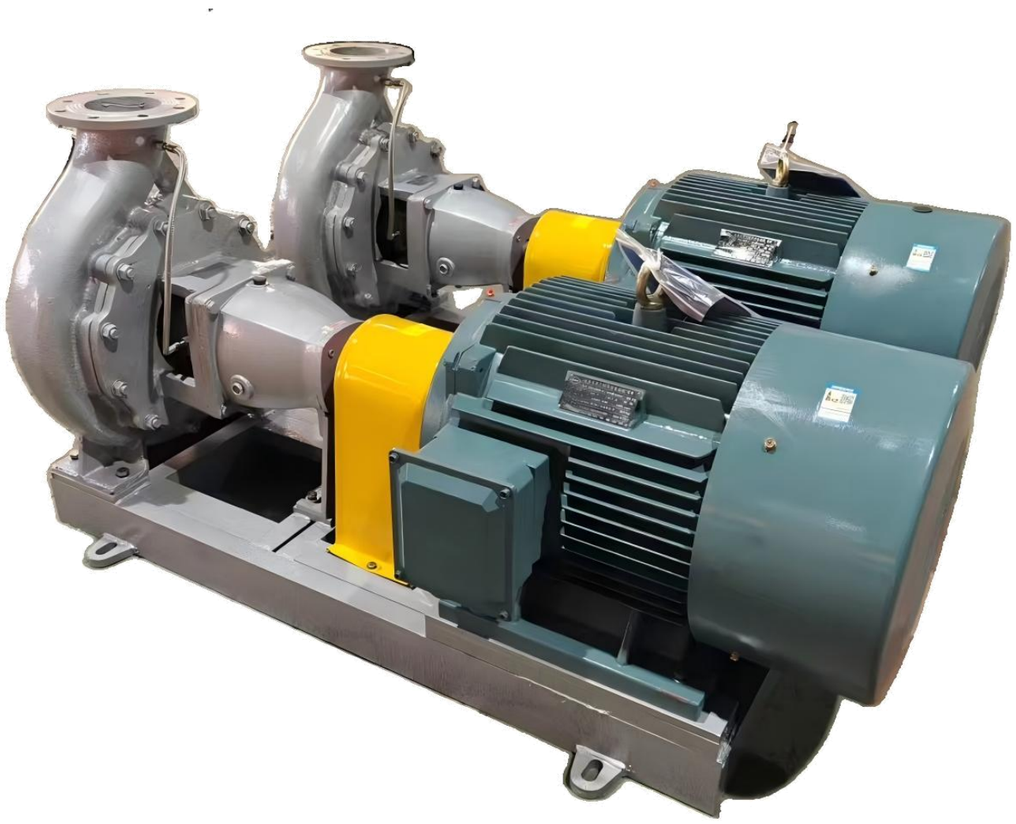
IS、IR、IH、HJ 离心泵使用说明书

Instructions for the use of the centrifugal pump IS, IR, IS, IH, HJ



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目录 Catalogue

一、用途及特点 Use and characteristics

IS、IR、IH、HJ、IH 型泵是卧式单级单吸清水离心泵，供吸送清水及物理化学性质类似水不含固体颗粒的液体。它广泛适用于工农业及城市、排水、消防供水等。

IS, IR, IH, HJ, and IH pumps are horizontal single stage single suction water centrifugal pump, for suction water and physical and chemical properties similar to water does not contain solid particles. It is widely used in industry and agriculture and urban areas, drainage, fire fighting and water supply, etc.

IS、IR、IH、HJ、IH 型泵系根据国际标准 ISO2858 所规定的性能和尺寸设计，其技术标准均向国际标准靠拢，达到国际先进水平。它是我国推广的节能泵类产品之一。

IS, IR, IH, HJ, IH pump system according to the performance and size design stipulated by the international standard ISO2858, their technical standards are close to the international standards, reaching the international advanced level. It is one of the energy-saving pump products promoted in China.

本泵结构简单，性能可靠，体积小，重量轻，抗汽蚀性能好，电耗低，使用维修方便。

The pump has simple structure, reliable performance, small volume, light weight, good cavitation resistance, low power consumption, easy to use and maintenance.

IS、IR、IH、HJ、IH 型泵通用性广，全系列共 140 种规格，但只用四种轴；同一规格的轴，轴承，轴封，叶轮紧固件等均能互换；全系列泵的悬架也只有四种。

IS, IR, IH, HJ and IH pumps have 140 specifications, but only four shafts, bearings, shaft seals, impeller fasteners can be exchanged, and only four suspensions of the whole series.

泵转速分为 2900 和 1450 转/分两种。The pump speed is 2900 and 1450 rpm.

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The performance is as follows：	2900 转/分　At 2,900 rpm	1450 转/分　At 1,450 rpm
Maximum flow:	240 米 ^{3}/分　240 m 3 / min	400 米 ^{3}/分　400 m 3 / min
Maximum total elevation:	125 米　125 Meters	55 米　55 Meters
maximum speed:	3500 转/分（用于 60 调波电源时，叶轮直径有所减少）3500 rpm (impeller diameter reduced for 60 wave modulation power supply)	
Maximum working temperature:	80℃	
允许吸入管路压力 0.3MPa，泵的最高使用压力 1.6MPa。The allowable suction line pressure is 0.3MPa, and the maximum service pressure of the pump is 1.6MPa.		

二、型号意义说明 Model meaning description

IS、IR、IH、HJ、IH	……	符合国际标准单级单吸清水离心泵 In line with the international standard single-stage single suction water centrifugal pump
100	……	泵吸入直径 100mm Pump suction diameter of 100mm
80	……	泵排出口直径 80mm The pump discharge outlet diameter is 80mm
160	……	叶轮名义直径 160mm Impeller with a nominal diameter of 160mm
A	……	型号叶轮直径第一次切割 Model impeller diameter for the first cut

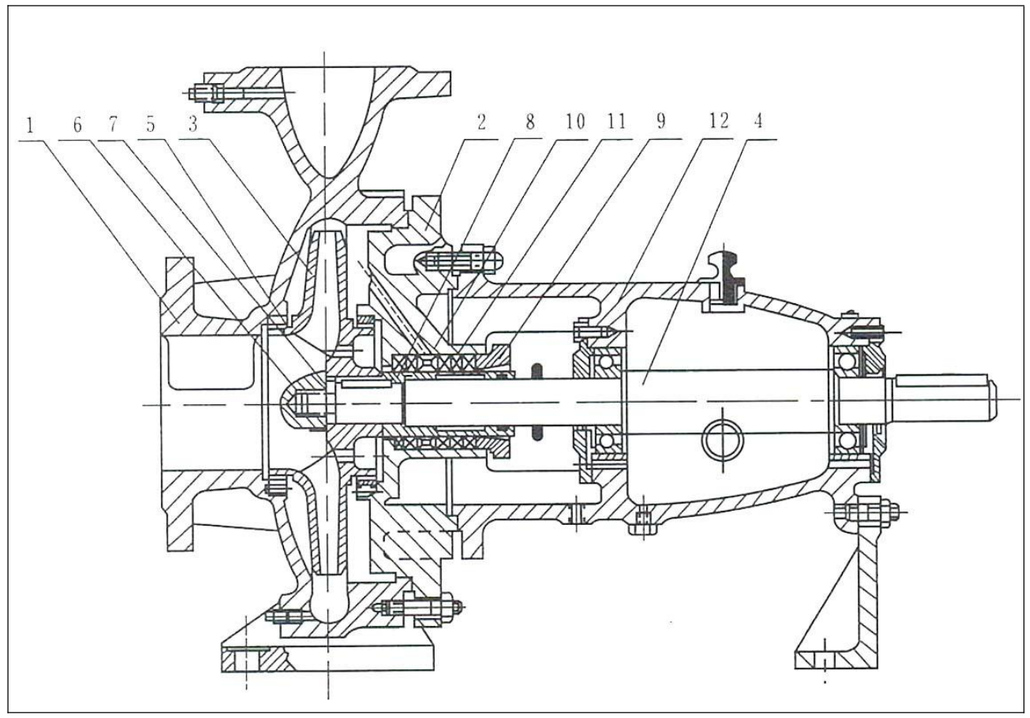
三、结构说明 Structure declaration

本泵为后开式，拆开泵盖和叶轮时不需拆卸吸水和排出管路。悬架内装有两个滚珠轴承，用机器油或润滑脂润滑。泵通过弹性联轴器由电动机直接驱动。涡室、脚、进水法兰和出水法兰铸成一个整体。

The pump is open after the rear, without removing the suction and drain line when opening the pump cover and impeller. The suspension is fitted with two ball bearings, lubricated with machine oil or grease. The pump is driven directly by a motor through the elastic coupling. The vortex chamber, foot, inlet flange and outlet flange are cast into a whole.

1	泵体 Barrel of pump	4	轴 Axle	7	止动垫圈 Lock washer	10	填料环 Packing ring
2	泵盖 Pump bonnet	5	密封环 Gasket ring	8	轴套 Axle sleeve	11	填料 Filling
3	叶轮 Impeller	6	叶轮螺母 Impeller nut	9	填料压盖 Stuffing box gland	12	悬架轴承部件 Suspension bearing parts

结 构 图 Assumption diagram



IS、IR、IH、HJ、IH 型泵系根据国家标准 IS02858 所规定的性能和尺寸设计的，主要由泵体（1）、泵盖（2）、叶轮（3）、轴（4）、密封环（5）、轴套（8）及悬架轴承部件（12）等所组成。

IS, IR, IH, HJ, IH pump system is designed according to the performance and size specified in the national standard IS02858, mainly composed of pump body (1), pump cover (2), impeller (3), shaft (4), sealing ring (5), shaft sleeve (8) and suspension bearing parts (12).

IS、IR、IH、HJ、IH 型泵的泵体和泵盖的郡分，是从叶轮背面处剖分的，即通常所说的后开门结构形式。其优点是检修方便，检修时不动泵体，吸入管路，排出管路和电动机，只需拆下加长联轴器的中间联接件，即可退出转子部件，进行检修。

The pump body of IS, IR, IH, IJ, IH pumps, and the county section of the pump cover are cut from the back of the impeller, which is commonly known as the rear door structure. Its advantages are convenient maintenance, maintenance does not move the pump body, suction pipe, discharge the pipe and motor, only remove the middle connection of the extended coupling, can exit the rotor parts for maintenance.

泵的壳体（即泵体和泵盖）构成泵的工作室、叶轮、轴和滚动轴承等为泵的转子。悬架轴承郡件支承着泵的转子部件，滚动轴承承受泵的径向力和轴向力。

The pump shell (i. e., the pump body and the pump cover) constitutes the workshop, impeller, shaft and rolling bearing of the pump as the rotor of the pump. The suspension bearing county supports the rotor parts of the pump, and the rolling bearing bears the radial and axial forces of the pump.

为了平衡泵的轴向力，大多数泵的叶轮前、后均设有密封环，并在叶轮后盖板上设有平衡孔，由于有些泵轴向力不大，叶轮背面未设密封环和平衡孔。

In order to balance the axial force of the pump, most of the pump impeller are equipped with sealing rings in front and back, and have balance holes on the rear

cover plate of the impeller. Because the axial force of some pumps is not large, there is no sealing ring and balance hole on the back of the impeller.

泵的轴向密封环是由填料压盖（9），填料环（10），和填料（11）等组成，以防止进气或大量漏水。泵的叶轮如有平衡，则装有软填料的空腔与叶轮吸入口相通，若叶轮入口处液体处于真空状态，则很容易沿着轴套表面进气，故在填料腔内装有填料环通过泵盖上的小孔将泵室内压力水刊至填料环进行密封。泵的叶轮如没有平衡孔，由于叶轮背面液体压力大于大气压，因而不存在漏气问题，故可不装填料环。

The axial sealing ring of the pump is composed of packing pressure lid (9), packing ring (10), and packing (11) to prevent air intake or large water leakage. If the impeller of the pump is balanced, the cavity equipped with soft filler is connected with the impeller suction mouth. If the liquid at the impeller entrance is in a vacuum state, it is easy to inlet along the surface of the shaft sleeve. Therefore, the packing ring is installed in the packing chamber to seal the pump indoor pressure water to the packing ring through the small hole on the pump cover. If the impeller of the pump has no balance hole, because the liquid pressure on the back of the impeller is greater than the atmospheric pressure, so there is no air leakage problem, so the packing ring can not be installed.

为避免轴磨损，在轴通过填料腔的部位装有轴套保护，轴套与轴之间装有 O 形密封圈，以防止沿着配合表面进气或漏水。

To avoid shaft wear, the shaft through the packing chamber is protected with an O-ring between the shaft to prevent air intake or water leakage along the mating surface.

泵的传动方式是通过加长弹性联轴器与电动机联结的。泵的旋转方向，从驱动端看，为顺时针方向旋转。

The transmission mode of the pump is connected with the electric motor by lengthening the elastic coupling. The rotation direction of the pump, seen from the drive end, rotates clockwise.

四、水泵装配与拆卸 Water pump assembly and removal

泵在装配前应首先检查零件有无影响装配的缺陷，并擦洗干净，方可进行装配。

Before assembly, the pump should first check whether the parts have any defects affecting the assembly, and scrub clean before assembly.

1、首先可将各处的连接螺栓，丝堵等分别拧紧在相应的零件上。

First of all, the connecting bolts, wire plugging can be tightened on the corresponding parts.

2、其次将 O 形密封圈、纸垫、毛毡等分别放置在相应的零件上。

Secondly, the O-ring, paper pad, felt and other placed on the corresponding parts.

3、接着可将密封环和填料、填料环、填料压盖等依次装到泵盖内。

Then the sealing ring and packing material, packing ring, packing pressure cover, etc. can be installed into the pump cover in turn.

4、将滚动轴承装到轴上，然后装到悬架内，再合上压盖，压紧滚动轴承，并在轴上套上连接螺栓。

Install the rolling bearing on the shaft, and then into the suspension, then close the pressure lid, press the rolling bearing, and connect the bolts on the shaft.

5、将轴套装在轴上，再将泵盖装在悬架上，然后再将叶轮、止动垫圈、叶轮螺母等装上并拧紧。最后将上述组件装到泵体内，并拧紧泵体、泵盖上的连接螺栓。

Set the shaft on the shaft, then install the pump cover on the suspension, and then install the impeller, stop washer, impeller nut and tighten it. Finally, install the above components into the pump body, and tighten the connecting bolts on the pump body and pump cover.

在上述装配过程中，一些小件如平键、挡油盘、挡水圈轴套内 O 形密封圈等容易遗漏或装错顺序，应特别注意。

In the above assembly process, some small pieces such as flat keys, oil pan, O-ring in the retaining ring shaft sleeve is easy to miss or wrong order, should pay special attention to.

泵拆卸顺序基本上可按装配顺序的反向进行。

The pump disassembly sequence can be basically conducted in reverse in the assembly order.

五、水泵安装 Pump installation

泵安装的好坏对泵的运行和寿命有重要影响，所以安装和校正必须仔细进行。泵的外形及安装尺寸。

The quality of the pump installation has an important impact on the operation and life of the pump, so the installation and correction must be carefully conducted. Appearance and installation size of the pump.

1、安装和校正 Installation and correction

（1）清除底座上的油腻和污垢，把底座放在地基上。

(1) Remove the greasy and dirt on the base, and put the base on the foundation.

（2）用水平仪检查底座的水平度，允许用楔铁找平。

(2) Check the levelness of the base with a level instrument, and allow the leveling with the wedge iron.

（3）用水泥浇灌底座和地脚螺栓孔眼。

(3) with cement water base and anchor bolt holes.

（4）水泥干固后应检查底座和地脚螺栓孔眼是否松动，合适后拧紧地脚螺栓，重新检查水平度。

(4) After cement dry fixation, check whether the base and anchor bolt hole is loose, tighten the anchor bolt after appropriate, and re-check the levelness.

（5）清理底座的支持平面，水泵脚及电机脚的平面，并把水泵和电机安装到底座上去。

(5) Clean the support plane of the base, the plane of the pump foot and the motor foot, and install the pump and motor to the bottom.

（6）联轴器之间应保持一定的间隙，检查水泵轴和电机转中心线是否一致，可用薄垫片调整使其同心。

(6) A certain gap should be maintained between the couplings, check whether the water pump shaft and the motor rotation center line are consistent, and the thin gasket can be adjusted to make it concentric.

测量联轴器的外园上下，左右的差别不得超过 0.1mm，两联轴器端面间隙一周上最大和最小的间隙差别不得超过 0.3mm。

Measure the difference between the left and right sides of the coupling, and the difference shall not exceed 0.1mm, and the maximum and minimum gap difference between the end surface of the two couplings shall not exceed 0.3mm.

2、安装说明 Installation instructions

（1）泵的安装高度，管路的长度、直径、流速应符合计算，力求减少不必要的损失。

(1) The installation height of the pump, the length, diameter and flow rate of the pipeline should conform to the calculation, and strive to reduce unnecessary losses.

（2）长距输送时应取较大的管径，泵的管路应有自已的支架，不允许管路的重量加在泵上，避免把泵压坏。

(2) long distance transmission should be a larger pipe diameter, the pump pipeline should have its own support, the weight of the pipeline is not allowed to be added to the pump, to avoid the pump pressure.

（3）排出管路如装逆止阀应装在闸阀的外面。

(3) If the discharge pipeline is installed, the check valve should be installed on the outside of the gate valve.

六、水泵起动、停止与运转 Start, stop, and operate of the water pump

1、起动 Start

（1）应在机泵联结前确定是电动机的旋转方向是否正确，泵的运转是否灵活。

(1) Determine whether the rotation direction of the motor is correct before the pump is connected, and whether the operation of the pump is flexible.

（2）关闭吐出管路上的闸阀。

(2) Close the gate valve on the discharge pipe.

（3）向泵内灌满水，或用真空泵引水。

(3) Fill the pump with water, or divert water with a vacuum pump.

（4）接通电源，当泵达到正常转速后，再逐渐打开吐出管路上的闸阀，并调节到所需要的工况，在吐出管上的闸阀关闭的情况下，泵连续工作的时间不得超过 3 分钟。

(4) Turn on the power supply, when the pump reaches the normal speed, then gradually open the gate valve on the pipe, and adjust to the required working condition, when the gate valve on the tube is closed, the continuous working time of the pump shall not exceed 3 minutes.

2、停止 Stop

（1）逐渐关闭吐出管路上的闸阀，切断电源。

(1) Gradually close the gate valve on the discharge pipe, and cut off the power supply.

（2）如环境温度低于 0℃，应将泵内水放出，以免冻裂。

(2) If the ambient temperature is lower than 0℃, the water in the pump should be released to avoid freezing and cracking.

（3）如长期停止使用，应将泵拆卸清洗上油，包装保管。

(3) If the pump is stopped for a long time, the pump should be removed and cleaned with the oil and packaged.

3、运转 Operate

（1）在开车及运转过程中，必须注意观察仪表读数，轴承发热，填料漏水和发热及的振动和杂音等是否正常，如果发现异常情况，应即时处理。

(1) In the process of driving and operation, we must pay attention to observe the instrument reading, bearing heating, packing water leakage and heating and vibration and noise are normal, if the abnormal situation is found, should be dealt with immediately.

（2）轴承温度最高不大于 80℃，轴承温度不得比周固温度超过 40℃。

(2) The maximum bearing temperature shall not be more than 80℃, and the bearing temperature shall not exceed 40℃ compared with the peripheral solid temperature.

（3）填料正常，漏水应该是少量均匀。

(3) the packing is normal, the leakage should be a small amount of uniform.

（4）轴承油位应保持在正常位置上，不能过高或过低，过低时应及时补充润滑油。

(4) The bearing oil level should be kept in the normal position, not too high or too low, and when too low, the lubricating oil should be added in time.

（5）如密封环和叶轮配合部位的间隙磨损过大应更换新的密封环。

(5) If the gap between the sealing ring and the impeller is too worn, a new sealing ring should be replaced.

七、水泵故障原因及其解决方法 The cause of water pump failure and its solution

序号	故障 breakdown	原因 reason	解决方法 resolvent
1	水泵不吸水，压力表及真空表的指针在剧烈摆动 The pump does not absorb water, and the hands of the pressure gauge and vacuum gauge swing violently	注入水泵的水不够，水管或仪表漏气 Insufficient water injected into the pump, water pipe or instrument leak	再往水泵内注入或拧紧堵塞漏气处 Then inject or tighten the blockage and air leakage into the pump
2	水泵不吸水，真空表表示高度真空 The pump does not absorb water, and the vacuum table indicates it high vacuum	底阀没有打开，或已淤塞吸水管阻力太大，吸水管高太大 The bottom valve is not open, or has silted up the suction pipe resistance is too large, the suction pipe is too high	校正或更改底阀；清洗或更改泵水管，减低吸水高度 Correct or change the base valve; clean or change Pump the water pipe, reduce the water absorption height
3	看压力表水泵出水处是有压力，然而水管仍不出水 Look at the pressure gauge water pump water outlet is there Pressure, but the pipe still no water	出水管阻力太大，旋转方向不对，叶轮淤塞 The outlet pipe resistance is too big, the rotation direction is wrong, the impeller blockage	捡查或缩短水管及检查电机，取下水管接头，清洗叶轮 Pick up or shorten the water pipe and check the motor Take the water pipe joint and clean the impeller
4	流量低于予计 The flow rate is lower than the amount	水泵淤塞，口环磨损过多 The pump blockage, the mouth ring wear too much	清洗水泵及管子，更换口环 Clean the water pump and pipe, and replace the mouth ring
5	水泵耗费的功率过大 The water pump consumes too much power	填料函压的太紧了，填料函发热，因磨损叶轮坏了，水泵供水量增加 The packing function pressure is too tight, the packing letter is hot, because the wear impeller is broken, the pump water supply is increased	拧紧填料函，或将填料取出来打方一些，更换叶轮，增加出水管阻力，来降低流量 Tighten the packing letter, or remove the packing to beat Square some, replace the impeller, increase the water pipe Resistance, to reduce the flow rate

6	水泵内部声音反常,水泵不水上 The sound inside the pump is abnormal, and the pump is not on the water	流量太大，吸水管内阻力过大，吸水高度过大，在吸水处有空气渗入，所输送的液体温度过高 The flow rate is too large, the resistance in the suction pipe is too large, the water absorption height is too large, there is air infiltration in the water absorption place, and the temperature of the liquid transported is too high	增加出水管内的阻力以减低流量，捡查泵吸入管内阻力，检查底阀减小吸水高度；拧紧堵塞漏气处，降低液体温度 Increase the resistance in the outlet pipe to reduce the flow Measure, pick up and check the resistance in the pump suction pipe The bottom valve reduces the water absorption height; tighten the blockage leakage Gas area, reduce the liquid temperature
7	轴承过热 bearing running hot	没有油，水泵轴与电机轴不在一条中心线上 No oil, the water pump shaft with the motor shaft Not on a single center line	注油，把轴中心对准 Fill the oil and align the shaft center
8	水泵振动 Pump vibration	泵轴与电机轴不在一条中心线上或泵轴斜了 The pump shaft is not on a center line or is inclined from the motor shaft	把水泵和电机的轴中心线对准 Align the shaft center line of the water pump and the motor